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09/871,630	06/04/2001	Hideki Sato	35.C15410	3202

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EXAMINER

CHANG, AUDREY Y

ART UNIT

PAPER NUMBER

2872

DATE MAILED: 05/13/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/871,630

Applicant(s)

SATO, HIDEKI

Examiner

Audrey Y. Chang

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 03 March 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-6, 8 and 9 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-6, 8 and 9 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

- This Office Action is in response to applicant's amendment filed on March 3, 2003, which has been entered as paper number 8.
- By this amendment, the applicant has amended claims 1-5, 8 and 9 and has canceled claim 7.
- Claims 1-6, 8 and 9 remain pending in this application.
- The objection to claim 4 is withdrawn in response to applicant's amendment.

Claim Objections

- Claim 1-6 are objected to because of the following informalities:

(1) *claim 1 has been amended* to include the feature "in an optical effective area thereof" that is vague and indefinite since it is not clear what is considered to be the "optical effective area".

(2) *claim 3 has been amended* to include the feature "due to manufacturing accuracy associated with" that is confusing and indefinite since it is not clear what exactly is considered to be the "manufacturing accuracy".

Appropriate correction is required.

Claim Rejections - 35 USC § 103

- The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject-matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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- **Claims 1-6 are rejected under 35 U.S.C. 103(a) as being unpatentable over the patent issued to Harris (PN. 5,496,616) .**

Claim 1 has been amended. New grounds of rejection are necessitated and are disclosed as follows.

Harris ('616) teaches a *diffractive optical element* that is comprised of a *diffraction grating portion* having a *first binary diffractive optical element* (10, Figure 4) having grating structure formed on a *first substrate* (14) and a *second corrector binary diffractive optical element* (24) having grating structure formed on a *second substrate* (28). Both of the diffractive optical elements (10 and 24) have a surface relief *phase* grating structure (12 and 26, Figure 4). Harris ('616) teaches that the first and second binary diffractive optical elements are accumulated with an *air space therebetween*, (please see Figure 1 and column 5). Harris ('616) also teaches that the first and second substrates can be made of *different* optically transmissive materials, (please see column 9 lines 36-38).

Harris ('616) further teaches that alignment markings could be produced at predetermined location on **both** of the substrates to align the two binary diffractive elements, (please see column 8, lines 16-20). This reference however does not teach explicitly that the alignment markings are formed at "optical effective area" of the diffractive optical elements. But the specification and the claims fail to describe what is considered to be the "optical effective area" such feature is therefore addressed here in the broadest interpretation. Harris ('616) teaches that the alignment markings are produced at predetermined locations on the *substrates*, (please see column 8, lines 16-20), wherein the entire substrate area is considered to be "optical effective" for allowing the incident light to pass through, (please see Figure 4). In such respect, the alignment markings are produced at "optical effective areas".

Furthermore, it would have been obvious to one skilled in the art to produce the alignment markings at particular "optical effective areas" such as the areas of the diffractive structure as obvious matters of

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design choice since the locations of the alignment markings do not effect the function of the marking for aligning the two binary diffractive elements.

With regard to claim 2, as demonstrated by Figure 1, the relief grating structure (12) of the first diffractive optical element (10) has a rotational symmetry. As demonstrated by Figure 3, the second diffractive optical element has relief grating structure with constant period (p) between the grating lines. These features suggest both the first and second diffractive optical element may have a concentric circular shape, although this reference does not explicitly state such. It however would also have been obvious to one skilled in the art to modify the diffractive optical elements to have concentric circular shape, if such is not the case, for the benefit of making the diffractive optical element with full rotational symmetry.

With regard to claims 2 and 3, this reference also does not teach explicitly about the size of the alignment markings to be less than 0.1 % of the "projection area" and to have performance influence *smaller* than the reduction of the performance of the diffractive optical element due to manufacturing accuracy. However since the specification and claims fail to *definitely* disclose what is considered to be the projection area and what is considered to be the "reduction of optical performance due to manufacturing accuracy", such features can only be examined in the broadest interpretation. If the "projection area" of the diffractive optical element is considered to be the extend of the diffractive optical element, it would certainly motivate one skilled in the art to make the alignment markings with size smaller than 0.1 percent of the area and to have smallest possible performance influence on the diffractive optical element so that the alignment markings will not interfere with the optical performance of the diffractive optical elements. It is believed that the alignment markings of the Harris reference must have optical influence that is negligible as compared to the optical performance of the diffractive optical elements in order for the diffractive optical elements to have the optimal performance.

With regard to claim 5, Harris also doe snot teach explicitly that the depth of the alignment markings is 10% or less than the depth of the diffractive optical elements. However such feature is either

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inherently met by the disclosure or an obvious modification to one skilled in the art for the benefit of making the alignment markings not to interfere with the optical performance of the diffractive optical elements.

- **Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over the patent issued to Imamura et al in view of the patent issued to Harris et al (PN. 5,214,535).**

The reasons for rejection are set forth in the previous Office Action dated October 1, 2002.

Harris teaches that alignment markings may be formed on both substrates of the assembly which means that a step of alignment is achieved with the observation of the alignment markings.

- **Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over the patent issued to Harris et al (PN. 5,214,535).**

The reasons for rejection are set forth in the previous Office Action dated October 1, 2002.

Double Patenting

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claims 1-6 and 8-9 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-14 of copending *Application No.*

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09/401,660. Although the conflicting claims are not identical, they are not patentably distinct from each other because they both recite a diffractive optical element having two layers of diffraction gratings and alignment markings on each of the layers to align the two gratings.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

Claims 1-6 and 8-9 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-10 and 13-15 of copending *Application No. 09/411,632*. Although the conflicting claims are not identical, they are not patentably distinct from each other because they both recite a diffractive optical element having two layers of diffraction gratings and alignment markings on each of the layers to align the two gratings.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

Response to Arguments

Applicant's arguments have been fully considered and they are not persuasive to overcome the rejections.

Applicant's arguments concerning the "optical effective area" having been addressed in the paragraphs above. The applicant is respectfully reminded that the location of the alignment markings is not a patentable distinction to the prior art since the location of the markings do not effect the function of the markings.

Conclusion

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Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Audrey Y. Chang whose telephone number is 703-305-6208. The examiner can normally be reached on Monday-Friday (8:00-4:30), alternative Mondays off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Cassandra Spyrou can be reached on 703-308-1637. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9318 for regular communications and 703-872-9319 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.

Audrey Y. Chang
Primary Examiner
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A. Chang, Ph.D.
May 8, 2003